CLAIMS

I claim:

1. An abrasive ejected onto a work piece to grind and process the work piece, the abrasive being composed of an inorganic powder that meets all the following conditions:

(1) its true specific gravity is 4 g/cm^3 or more;

(2) its average particle diameter is from 5 μm to 50 μm inclusive;

(3) its maximum particle size is 100 μm or less;

(4) its hardness (HMV) is from 110 to 340 inclusive.

2. The abrasive according to claim 1, wherein the average particle diameter of the inorganic powder is from 10 μm to 30 μm inclusive.

3. The abrasive according to claim 1 or 2, wherein the maximum particle size of the inorganic powder is 80 μm or less.

4. The abrasive according to claim 1, wherein the inorganic powder is metal powder.

5. The abrasive according to claim 4, wherein the principal component of the metal powder is iron or an iron-based alloy and the metal powder contains not more than 0.1 wt% aluminum and not more than 0.1 wt% titanium.

6. The abrasive according to claim 5, wherein the metal powder is stainless steel containing not less than 8 wt% chromium.

7. The abrasive according to claim 5, wherein the metal powder is stainless steel containing not more than1.5 wt% boron.

8. The abrasive according to claim 1, wherein the tap density of the metal powder is from 4.3 g/cm^3 to 4.8 g/cm^3 inclusive.

9. The abrasive according to claim 1, wherein 0.01 wt% to 5 wt% of a substance providing fluidity and resistance to moisture absorption is mixed in 100 wt% of the inorganic powder.

10. The abrasive according to claim 1, wherein a substance providing fluidity and resistance to moisture absorption is attached to a part of or the entire surface of the inorganic powder in the proportions of 0.01 wt% to 5 wt% of the substance to 100 wt% of the inorganic powder.

11. The abrasive according to claim 1, wherein the work piece is a paste layer formed on a substrate.

12. An abrasive manufacturing method comprising the steps of:

causing molten metal contained in a tundish including an ejecting nozzle to eject from the ejecting nozzle; and

ejecting a high-pressure fluid onto the molten metal ejected from the ejecting nozzle in such a manner that the high-pressure fluid will form a generally conical shape,

which converges downwards, and will surround the molten metal, thereby powdering the molten metal;

wherein the angle of a vertex of the generally conical shape that is formed by ejection of the high-pressure fluid is set between not less than 10 degrees and less than 30 degrees.

13. The abrasive manufacturing method according to claim 12, wherein the angle of a vertex of the generally conical shape that is formed by ejection of the high-pressure fluid is set from 15 degrees to 25 degrees inclusive.

14. The abrasive manufacturing method according to claim 12, wherein the angle of a vertex of the generally conical shape that is formed by ejection of the high-pressure fluid is set to 20 degrees.

15. The abrasive manufacturing method according to any one of claims 12 to 15, further comprising the step of heating the tundish.

16. The abrasive manufacturing method according to claim 15, wherein the tundish is heated so that the temperature of the molten metal ejected from the ejecting nozzle will be between 1600 and 1700 inclusive.

17. The abrasive manufacturing method according to claim 12, wherein as the molten metal, a raw material is used whose principal component is iron or an iron-based alloy, and which contains carbon in the range of 0.060 wt% to 0.070 wt% inclusive, and to which no

aluminum or titanium is added.

18. An abrasive manufacturing device comprising:

a tundish for containing molten metal;

an ejecting nozzle mounted on the tundish to cause the molten metal contained in the tundish to eject out; and

an atomizing nozzle for ejecting a high-pressure fluid onto the molten metal ejected from the ejecting nozzle in such a manner that the high-pressure fluid will form a generally conical shape, which converges downwards, and will surround the molten metal;

wherein the atomizing nozzle causes a high-pressure fluid to eject so that the angle of a vertex of the generally conical shape that is formed by ejection of the high-pressure fluid will be between not less than 10 degrees and less than 30 degrees.

19. The abrasive manufacturing device according to claim 18, wherein the atomizing nozzle causes the high-pressure fluid to eject so that the angle of a vertex of the generally conical shape that is formed by ejection of the high-pressure fluid will be from 15 degrees to 25 degrees inclusive.

20. The abrasive manufacturing device according to claim 18, wherein the atomizing nozzle causes the high-pressure fluid to eject so that the angle of a vertex of the generally conical shape that is formed by ejection of the high-pressure fluid will be 20 degrees.

21. The abrasive manufacturing device according to any one of claims 18 to 20, further comprising a heater for heating the tundish.

22. The abrasive manufacturing device according to claim 21, wherein the heater heats the tundish so that the temperature of the molten metal ejected from the ejecting nozzle will be between 1600 and 1700 inclusive.

23. An abrasive manufactured by an abrasive manufacturing method comprising the steps of:

causing molten metal contained in a tundish including an ejecting nozzle to eject from the ejecting nozzle; and

ejecting a high-pressure fluid onto the molten metal ejected from the ejecting nozzle in such a manner that the high-pressure fluid will form a generally conical shape, which converges downwards, and will surround the molten metal, thereby powdering the molten metal;

wherein the angle of a vertex of the generally conical shape that is formed by ejection of the high-pressure fluid is set between not less than 10 degrees and less than 30 degrees.

24. An abrasive manufactured by an abrasive manufacturing device comprising:

a tundish for containing molten metal;

an ejecting nozzle mounted on the tundish to cause the molten metal contained in the tundish to eject out; and

an atomizing nozzle for ejecting a high-pressure fluid onto the molten metal ejected from the ejecting nozzle in such a manner that the high-pressure fluid will form a generally conical shape, which converges downwards, and will surround the molten metal;

wherein the atomizing nozzle causes the high-pressure fluid to eject so that the angle of a vertex of the generally conical shape that is formed by ejection of the high-pressure fluid will be between not less than 10 degrees and less than 30 degrees.